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PATENT APPLICATION

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IN THE  
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Jennifer FU

Confirmation No.: 6311

Application No.: 10/721,708

Examiner: Mitchell, Jason D.

Filing Date: 11/24/2003

Group Art Unit: 2193

Title: BLACK BOX TESTING IN MULTI-TIER APPLICATION ENVIRONMENTS

Mail Stop Appeal Brief-Patents  
Commissioner For Patents  
PO Box 1450  
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on 11/26/2007.

- ☒ The fee for filing this Appeal Brief is \$510.00 (37 CFR 41.20).  
☐ No Additional Fee Required.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

- ☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:
- |   |   |  |  |
|---|---|--|--|
| <input type="checkbox"/> 1st Month<br>\$120 | <input type="checkbox"/> 2nd Month<br>\$460 | <input type="checkbox"/> 3rd Month<br>\$1050 | <input type="checkbox"/> 4th Month<br>\$1640 |
|---|---|--|--|

☐ The extension fee has already been filed in this application.

- ☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 08-2025 the sum of \$ 510. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees.

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Signature:

Respectfully submitted,

Jennifer FU

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellant:	Jennifer Fu	Patent Application
Serial Number:	10/721,708	Group Art Unit: 2193
Filed:	November 24, 2003	Examiner: Mitchell, J.
For:	BLACK BOX TESTING IN MULTI-TIER APPLICATION ENVIRONMENTS	

APPEAL BRIEF

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I. Real Party in Interest

The assignee of the present invention is Hewlett-Packard Development Company,  
L.P.

## II. Related Appeals and Interferences

There are no related appeals or interferences known to the Appellants.

### III. Status of Claims

Claims 1- 21 are rejected. This Appeal involves Claims 1-21.

#### IV. Status of Amendments

All proposed amendments have been entered. An amendment subsequent to the Final Action has not been filed.

## V. Summary of Claimed Subject Matter

Independent Claims 1, 11, and 21 of the present application pertain to embodiments associated with methods and systems of black box testing in a multi-tier application environment.

As recited in Claim 1, a “method of black box testing in a multi-tier application environment” is disclosed. One embodiment is depicted at least in Figures 3 and 4. As described in the instant disclosure on page 13, lines 9-15, one method includes dividing a multi-tier application 200 into a plurality of tier-specific modules, e.g., tier-specific modules 310, 320, and 330. The instant disclosure further includes on page 13, lines 16-20, testing each of said plurality of tier-specific modules as a black box. Furthermore, the instant disclosure includes on page 11, lines 4-10 and page 14, lines 1-9 observing an output of one of said plurality of tier-specific modules.

As recited in Claim 11, a “computer readable media comprising computer usable instructions that when executed on a computer system implement a method of black box testing in a multi-tier application environment” is disclosed. One embodiment is depicted at least in Figures 3 and 4. As described in the instant disclosure on page 13, lines 9-15, one method includes dividing a multi-tier application 200 into a plurality of tier-specific modules, e.g., tier-specific modules 310, 320, and 330. The instant disclosure further includes on page 13, lines 16-20, testing each of said plurality of tier-specific modules as a black box. Furthermore, the instant disclosure includes on page 11, lines 4-10 and page 14, lines 1-9 observing an output of one of said plurality of tier-specific modules.

As recited in Claim 21, a “computer usable media comprising test output from a tier-specific module, wherein said tier specific module performs a portion of a multi-tier application” is disclosed and described on page 11, lines 4-10, page 13, lines 9-20, and page 14, lines 1-9.



## VI. Grounds of Rejection to Be Reviewed on Appeal

1. Claims 1-4, 6-14, and 16-21 are rejected under 35 U.S.C. §102(b) as being anticipated by “End-to-End Testing of IT Architecture and Applications” by Bocarsly et al. (hereinafter referred to as Bocarsly).
2. Claims 5 and 15 are rejected under 35 U.S.C. §103(a) as being unpatentable over “End-to-End Testing of IT Architecture and Applications” by Bocarsly.

## VII. Argument

### 1. Whether Claims 1-4, 6-14, and 16-21 are Anticipated by Bocarsly

Claims 1-4, 6-14, and 16-21 are rejected under 35 U.S.C. §102(b) as being anticipated by Bocarsly. Appellant has reviewed the cited reference and respectfully submits that the embodiments of the present invention as recited in Claims 1-4, 6-14, and 16-21 are not anticipated by Bocarsly, in view of the following rationale.

According to the Federal Circuit, “[a]nticipation requires the disclosure in a single prior art reference of each claim under consideration” (*W.L. Gore & Assocs. v. Garlock Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983). “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference” (*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); see also MPEP 2131).

Appellants respectfully submit that Bocarsly does not anticipate the claimed embodiments in the manner set forth in independent Claims 1, 11, and 21. More specifically, Bocarsly does not teach “testing each of said plurality of tier-specific modules as a black box” or “observing an output of one of said plurality of tier-specific modules” as is recited in Claim 1.

The present Office Action states that Bocarsly anticipates Appellant’s invention on page 3, lines 1-7 in the following manner:

Claim 1 recites a method “comprising ... testing each of said ... modules as a black box”. This use of ‘comprising’ language indicates that an anticipatory reference can properly disclose additional functionality. Accordingly the fact the Bocarsly performs white box testing in addition to the claimed black box testing (i.e. Functional Tests) does not preclude anticipation.

Additionally, it is noted for the sake of furthering prosecution that removing the white box testing would be an obvious simplification (see e.g. MPEP 2144.04 II).

Appellant respectfully disagrees with the present Office Action's characterization of the Bocarsly reference and its comparison to Appellant's invention. Appellant understands Bocarsly to teach a testing approach utilizing only portions of both the typical black box and white box testing methods. For example, the last paragraph on page 2 of Bocarsly states:

In some ways, End-to-End Architecture Testing is essentially a "gray box" approach to testing – a combination of the strengths of white box and black box testing. ... By merging white and black box testing techniques, End-To-End Architecture Testing eliminates the weaknesses inherent in each, while capitalizing on their respective advantages.

Emphasis added. Thus, the Present Office action characterizes Bocarsly as teaching a combined white and black box testing technique approach. However, as shown in the above citation, only a select portion of each of the white and black box testing techniques are strategically and collectively utilized. Bocarsly integrates only a select portion of white and black box testing techniques due to "the weaknesses inherent in each". Bocarsly combines the strengths of white and black box testing to achieve a final integrated product. Bocarsly does not teach a combination of white and black box testing techniques that is partitionable into either white or black box testing techniques. Bocarsly, page 2, last paragraph.

In contrast, Appellant's invention tests "each of said plurality of tier-specific modules as a black box". Claim 1. Therefore, the present Office Action's argument regarding "the fact the Bocarsly performs white box testing in addition to the claimed black box testing (i.e. Functional Tests) does not preclude anticipation" does not apply to Appellant's situation since Bocarsly in fact discloses an integration of portions of white box and black box testing.

Thus, Appellant respectfully submits that Bocarsly does not anticipate the Appellant's invention as is set forth in independent Claims 1, 11, and 21, and as such, Claims 1, 11, and 21 traverse the present Office Action's basis for rejection under 35 U.S.C. §102(b) and are in condition for allowance. Accordingly, Appellant also respectfully submits that Bocarsly does

not anticipate the present claimed invention as is recited in Claims 2-4 and 6-10, 12-14 and 16-20 dependent on Claims 1 and 11 respectively, and that these Claims overcome the rejection under 35 U.S.C. §102(b) as being dependent on an allowable base Claim.

2. Whether Claims 5 and 15 Are Rendered Obvious Under Bocarsly

The present Office Action rejected Claims 5 and 15 under 35 U.S.C. §103(a) as being unpatentable over Bocarsly. Appellant respectfully submits that the embodiments of the present invention as recited in Claims 5 and 15, as well as in independent Claims 1 and 11 on which Claims 5 and 15 depend, are not anticipated by Bocarsly, in view of the following rationale.

“As reiterated by the Supreme Court in *KSR*, the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual inquiries” including “[a]scertaining the differences between the claimed invention and the prior art” (MPEP 2141(II)). “In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious” (emphasis in original; MPEP 2141.02(I)).

Appellant respectfully submits that Appellant’s invention as a whole is not obvious in view of Bocarsly. Bocarsly does not render obvious the claimed embodiments in the manner set forth in independent Claims 1, 11, and 21. In particular, Appellant respectfully submits that Bocarsly teaches away from Appellant’s invention. For example, the last paragraph on page 2 of Bocarsly states:

...In white box testing, a tester has access to, and knowledge of, the underlying system components. Although white box testing can provide very detailed and valuable results, it falls short in detecting many integration and system performance issues. In contrast, black box testing assumes little or no knowledge of the internal workings of the system,

but instead focuses on the end-user experience – ensuring the user is getting the right results in a timely manner. Black box tests cannot typically pinpoint the cause of problems. Nor can they ensure that any particular piece of code has been executed, runs efficiently, and does not contain memory leaks or other similar problems. By merging white and black box testing techniques, End-To-End Architecture Testing eliminates the weaknesses inherent in each, while capitalizing on their respective advantages.

Emphasis added. As shown, Bocarsly specifically points out the perceived flaws of black box testing. Bocarsly also states in particularity that it is “merging white and black box testing techniques” in order to eliminate “the weaknesses inherent in each”. Not only does Bocarsly modify black box testing by only using its perceived strengths, it also combines this with a modified white box testing. Whereas, Appellant’s invention uses only black box testing techniques. Thus, Bocarsly teaches away from Appellant’s invention since Bocarsly teaches the merging of only the perceived strengths of both white and black box testing techniques, and explains the use of the black box testing technique by itself as inadequate.

The present Office Action states, “it is noted for the sake of furthering prosecution that removing the white box testing would be an obvious simplification”. However, due to the inherent weaknesses in both white and black box testing techniques (as described in Bocarsly), removing white box testing to leave portions of black box testing would not be an obvious simplification of Bocarsly because this modification would not render an invention that may perform in the manner intended by either Bocarsly or Appellant.

In summary, Appellant respectfully submits that essential elements needed for a *prima facie* rejection of Claims 1, 11, and 21 are missing, and respectfully submits that the rejection of Claims 2-10, and 12-2 overcomes the rejection under 35 U.S.C. §103(a) as being dependent upon allowable base claims.


### Conclusion

Appellant believes that pending Claims 1-4, 6-14, and 16-21 are not taught by Bocarsly. Moreover, Appellant believes that pending Claims 5 and 15 are patentable over Bocarsly. Appellant submits that Claims 1-21 are patentable over the prior art.

Appellant respectfully requests that the rejection of Claims 1-21 be reversed. The Appellant wishes to encourage the Examiner or a member of the Board of Patent Appeals to telephone the Appellant's undersigned representative if it is felt that a telephone conference could expedite prosecution.

Respectfully submitted,  
WAGNER BLECHER LLP

Dated: 1/28/2008



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### VIII. Appendix - Clean Copy of Claims on Appeal

What is claimed is:

1. A method of black box testing in a multi-tier application environment comprising:  
  
dividing a multi-tier application into a plurality of tier-specific modules;  
testing each of said plurality of tier-specific modules as a black box; and  
observing an output of one of said plurality of tier-specific modules.
2. The method of Claim 1 wherein an output from a first tier-specific module of said plurality of tier-specific modules is used as input to a subsequent tier-specific module of said plurality of tier-specific modules.
3. The method of Claim 2 wherein said output is stored in a computer usable media prior to use as said input.
4. The method of Claim 2 wherein said output is stored, prior to said use as said input, for a period of time substantially greater than a time that said output is stored during use of said multi-tier application.
5. The method of Claim 2 further comprising:  
  
automatically comparing an output of said first tier-specific module to an input specification of said subsequent tier-specific module;  
  
continuing said testing if said output meets said input specification; and  
  
halting said testing if said output does not meet said input specification.
6. The method of Claim 1 wherein at least one of said plurality of tier-specific modules is tested prior to availability of a preceding tier-specific module.

7. The method of Claim 6 wherein simulated input is used to test said at least one of said plurality of tier-specific modules.

8. The method of Claim 1 further comprising performing an end-to-end black box test on said multi-tier application.

9. The method of Claim 1 wherein said multi-tier application environment comprises a utility data center.

10. The method of Claim 1 wherein each of said plurality of tier-specific modules executes within a single tier of said multi-tier application environment.

11. A computer readable media comprising computer usable instructions that when executed on a computer system implement a method of black box testing in a multi-tier application environment, said method comprising:

accessing a plurality of tier-specific modules that comprise a multi-tier application;  
testing each of said plurality of tier-specific modules as a black box; and  
observing an output of one of said plurality of tier-specific modules.

12. The computer readable media of Claim 11 wherein an output from a first tier-specific module of said plurality of tier-specific modules is used as input to a subsequent tier-specific module of said plurality of tier-specific modules.

13. The computer readable media of Claim 12 wherein said output is stored in a computer usable media prior to use as said input.



14. The computer readable media of Claim 12 wherein said output is stored, prior to said use as said input, for a period of time substantially greater than a time that said output is stored during use of said multi-tier application.

15. The computer readable media of Claim 12 further comprising:  
automatically comparing an output of said first tier-specific module to an input specification of said subsequent tier-specific module;  
continuing said testing if said output meets said input specification; and  
halting said testing if said output does not meet said input specification.

16. The computer readable media of Claim 11 wherein at least one of said plurality of tier-specific modules is tested prior to availability of a preceding tier-specific module.

17. The computer readable media of Claim 16 wherein simulated input is used to test said at least one of said plurality of tier-specific modules.

18. The computer readable media of Claim 11 further comprising performing an end-to-end black box test on said multi-tier application.

19. The computer readable media of Claim 11 wherein said multi-tier application environment comprises a utility data center.

20. The computer readable media of Claim 11 wherein each of said plurality of tier-specific modules executes within a single tier of said multi-tier application environment.

21. A computer usable media comprising test output from a tier-specific module, wherein said tier-specific module performs a portion of a multi-tier application.

## IX. Evidence Appendix

No evidence is herein appended.

## X. Related Proceedings Appendix

No related proceedings.